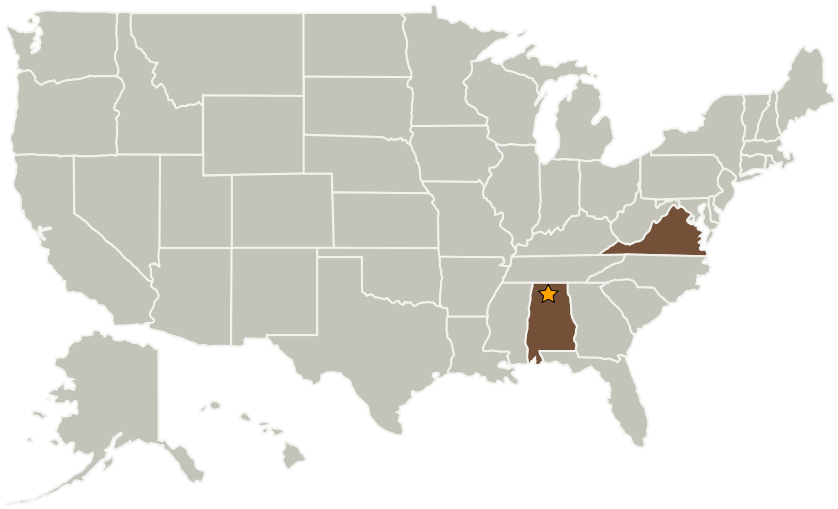
System Engineering Software Assessment Model for Exploration (SESAME), Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

Concept phase space-systems architecture evaluations typically use mass estimates as the primary means of ranking potential mission architectures. Software does not directly have physical mass and, as a result, is often left-out of such evaluations, despite the potential of being one of the main contributors to a mission's overall cost and risk. During NASA's Concept Exploration and Refinement (CE&R) program, personnel from MIT, Draper Laboratories, and Payload Systems Inc. developed a systems architecture software assessment approach that addresses both the early concept phases of a program and the complexities of critical embedded software systems. This approach uses a series of weighted software and human-computer interaction parameters that evaluate how a system's architecture affects software. Payload Systems Inc. proposes to validate this Systems Engineering Software Assessment Model for Exploration as the next step on the path to a tool that provides early, reliable ranking of systems architectures based on software. The Phase I effort will focus on validation of this assessment tool. This validation will be based on embedded spaceflight systems projects. Once validated, this assessment approach will provide a basis, during Phase II, for the development of a Systems Engineering tool for assessing the impact candidate system architectures on software.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Aurora Flight Sciences Corporation	Supporting Organization	Industry	Cambridge, Massachusetts

Primary U.S. Work Locations	
Alabama	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.1 Software Development, Engineering, and Integrity
    - TX11.1.4 Operational Assurance